

## LOG AND SCREW PIN BUILDING SYSTEM

5        This application claims the benefit of U.S. Provisional Application, Serial No. 60/162,535, filed October 29, 1999 in Express Mail Label No. EL438309092 by the same inventor, Richard J. Englehart, entitled LOG AND SCREW PIN BUILDING SYSTEM.

10      **Background of the Invention**

1      **1. Field of Invention**

This invention pertains to the art of methods and apparatuses for  
15 construction of various structures such as cabins, play-houses and tool sheds, and more specifically to methods and apparatuses for building structures using interlocking log-like members and screw-like fastening members.

2      **2. Description of the Related Art**

Playhouses, tool sheds and other such structures are known in the art to be made of molded plastic and comprise a pre-determined shape.

Climbing structures are also known in the art which incorporate modular  
25 components which may be arranged in a variety of configurations. However, these structures are generally formed of pre-treated lumber which is not only costly, but heavy as well.

Structures such as cabins may be formed of real wood logs, which again are  
30 very costly.

Toy building systems that children have enjoyed for many decades are Lincoln Logs® and the like. Such toy building systems employ wooden or plastic logs that are notched so that adjacent pieces may be perpendicularly nested

5 together, similar to building a real log cabin. One aspect of these systems which is particularly appealing is that structures having a wide variety of configurations can be easily assembled and disassembled. However, the structures made by these systems are limited in size. Further, these toy systems do not provide means for maintaining adjacent logs in any permanent or semi-permanent relationship.

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#### Summary of the Invention

The present invention is directed to log-like members utilized to build structures and to the fastening members useful to selectively hold the log-like members together in a semi-permanent arrangement. Taken together, the log-like

15 members and the fastening members form a building system.

In accordance with one aspect of the invention, a building system comprises a first building member having a first notched region including a generally planar recessed first surface having a first hole therein; a second building member having

20 a second notched region including a generally planar recessed second surface having a second hole therein, the second notched region being adapted for nesting engagement with the first notched region when the first and second building members are disposed in a predetermined relative position and the first and second holes are axially aligned; and, means for selectively fastening the first and second

25 building members in a semi-permanent relationship.

According to another aspect of the invention, the fastening means includes a first fastening member having a central axis and a threaded axial recess at a first end, and a second fastening member having a central axis and an axially extending

30 threaded region at a second end, the threaded region of the second fastening

member being dimensioned and configured for engagement within the threaded axial recess of the first fastening member.

According to another aspect of the invention the first building member  
5 comprises a hollow body.

According to another aspect of the invention the first building member comprises a body formed of polyethylene.

10 According to another aspect of the invention, a structure is formed from first and second building members being held in a predetermined relative position by first and second fastening members.

According to another aspect of the invention, a method for building a  
15 structure is provided. The method includes the steps of providing a first building member as described above, providing a second building member as described above, providing means for selectively fastening the first and second building members in a semi-permanent relationship as described above, positioning the first fastening member in the first hole; positioning the second notched region of the  
20 second building member into nesting engagement with the first notched region of the first building member; positioning the second fastening member in the second hole; and, rotating the second fastening member so that the axially extending threaded region is engaged within the threaded axial recess of the first fastening member.

25 According to another aspect of the invention, a fastening assembly is provided comprising a first fastening member having a length, a first end, a second end, a central axis, and a threaded axial recess at the first end; and, a second fastening member having a length, a first end, a second end, a central axis, and an axially extending threaded region at the second end, the axially extending threaded  
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region being engaged within the threaded axial recess of the first fastening member

One advantage of the present invention is the light-weight nature of the log-like members which eliminates the need for riggers such as front end loaders and  
5 booms during the erection of the structure. The assembly could be done manually with no tools needed.

Another advantage of the invention is the safety factor. Should a log-like member of the present invention fall on an individual, there would be little or no  
10 injury in comparison to what would occur from a falling natural log.

Another advantage of the invention is the easy modification or moving (disassembly and reconstruction) of a unit made from the log-like members of the present invention.

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Another advantage of the invention is the innovative fasteners which allow quick and easy semi-permanent structures to be built.

Still other benefits and advantages of the invention will become apparent to  
20 those skilled in the art to which it pertains upon a reading and understanding of the following detailed specification.

#### **Brief Description of the Drawings**

25 The invention may take physical form in certain parts and arrangement of parts, a preferred embodiment of which will be described in detail in this specification and illustrated in the accompanying drawings which form a part hereof and wherein:

30 Fig. 1 is a partial perspective view of a log-like member according to the

present invention;

Fig. 2 is a perspective view of a first embodiment of a screw-like fastening member according to the invention;

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Fig. 3 is a perspective view of adjacent log-like members;

Fig. 4 is a partial cross-sectional view of a plurality of log-like members and screw-like fasteners that form the building system of the present invention;  
10 and,

Fig. 5 is a partial cross-sectional view of the screw-like fasteners of the present invention being used as fasteners for objects other than the log-like members.

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#### Description of the Preferred Embodiment

Referring now to Figures 1-5 wherein the showings are for purposes of illustrating a preferred embodiment of the invention only and not for purposes of  
20 limiting the same, the present invention is directed to the log-like members 10 and the screw-like fastening members 14 which together form a building system.

The log-like members 10 may be formed of a light-weight material and fashioned to have a brick, wood board, stone or other appearance. The preferred  
25 material is polyethylene plastic, but other material capable of performing the objects of the invention may be utilized as well.

The screw-like fastening member 14 includes a cylindrical body 16 having a flange 20 at a first end 22 and an axially extending threaded region 24 at a second  
30 end 26. The cylindrical body 16 includes a threaded axial recess 30 at the flanged

end 22. When two fastening members 14A, 14B are axially aligned, the axially extending threaded region 24A of the first fastening member 14A is adapted to be engagedly received within the threaded recess 30B of the second fastening member 14B. In one embodiment of the present invention, the fastening members 14 are 5 utilized to selectively secure adjacent log-like members 10A, 10B together.

However, it is an object of the present invention to provide screw-like members 14 that may selectively fasten together other objects 34, not necessarily limited to the log-like members 10 described in this disclosure.

10       The log-like members 10 are preferably hollow, modified cylinders that are capped at the ends 38. The preferred construction of the log-like members includes notched regions 50 at predetermined intervals along the length. The notched region 50 is characterized by a generally planar recessed surface 52 disposed between two side planar surfaces 56, 58. The log-like member 10 may further 15 include similar notched regions 60 opposite the first notched regions 50. The log-like members 10 can be arranged in perpendicular fashion with adjacent log-like members 10 being nested together at the notched regions 50, 60. It is an object of the present invention to incorporate means to selectively fasten adjacent log-like members 10 together.

20       In a preferred embodiment, the planar recessed surfaces 52 of the notched regions 50 each have a through-hole 64 in them. In the most preferred embodiment, each through-hole 64 is encircled with a recessed seat 68 adapted to engage the flange 20 of a screw-like fastening member 14. In the preferred 25 embodiment, when the flange 20 is engaged on the seat 68, the top surface 72 of the fastening member 14 is flush with the recessed surface 52 of the notched region 50. As the screw-like fastener 14 is tightened, flange 20 applies pressure to the log-like member with which it is in contact.

30       In the preferred embodiment, the fastening member 14 is a hollow pipe or

rigid hollow tubing having an axial opening that extends from first end 22 to second end 26. This construction allows for the fastening members 14 to be stored end to end on a rod. However, it is within the scope of the present invention to provide a solid stock body with the axial recess 30 described above.

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Also in the preferred embodiment, the flange 20 is provided with means for rotation of the fastening member 14 about its axis. Preferably, the rotation means is a plurality of spaced openings for manual turning of the fastening member 14. Other means, such as slots, ridges, and the like may be provided so that the  
10 fastening member may be manually or mechanically rotated.

Preferably, the log-like members 10 are "life size", meaning that they would be utilized to form structures large enough for human occupation. It is within the scope of the present invention to provide log-like members in a variety  
15 of diameters and lengths to accomplish a variety of construction needs. Likewise, the fastening members would be sized appropriately to accommodate a variety of log-like member sizes.

The preferred building system of the present invention includes utilization  
20 of both log-like members 10 and screw-like fastening members 14. Although the log-like members 10 may be arranged to provide a structure without using the fastening members 14, the preferred embodiment includes the fastening members 14 to provide stability to the structure.

25 It is within the scope of the present invention to provide capping means such as top cap 80 or bottom cap 82 to give a "finished look" to the structure.

The preferred method of producing the log-like members 10 of the invention includes the steps of forming a hollow tubular object, such as that formed  
30 by the process of rotational molding.

The invention has been described with reference to preferred embodiment. Obviously, modifications and alterations will occur to others upon a reading and understanding of this specification. It is intended to include all such modifications and alterations in so far as they come within the scope of the appended claims or the equivalence thereof.